

TEST REPORT

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PRODUCT EVALUATED: 3M™ Fire Barrier Watertight Spray

EVALUATION PROPERTY: CDPH Specification 01350 v1.1: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v1.1

Report of for compliance with the applicable requirements of the following criteria: CDPH Specification 01350 v1.1: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v1.1 and LEED v4.

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2 Introduction

Intertek has conducted testing for 3M on 3M™ Fire Barrier Watertight Spray Testing was conducted following the standard methods of CDPH Specification 01350 v1.1: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v 1.1.

3 Test Samples

3.1.1. SAMPLE SELECTION

One sealed 5 gallon pail of 3M™ Fire Barrier Watertight Spray sample ID 98-0441-1004-1 Lot 6250CM manufactured on 9/6/2016. The material was sampled by Paul Fannin at 3M Center, Building 230-BE-16, St. Paul, MN 55144. The sample was shipped on 12/20/2016, and arrived at the lab on 12/21/2016. The Middleton Lab ID Tracking number: MIDMID1612211306-001

3.1.2. SAMPLE AND ASSEMBLY DESCRIPTION

The product density was report at 1.29 g/ml. Therefore, 731.41g of sample was spread evenly with a putty knife to make a sample about 0.1 inches thick on a 6 by 6 inch stainless steel plate. The sample was immediately transferred to the environmental chamber and the date and time recorded. The wet sample was place directly on the bottom of the square VOC chamber. See the photo in the chamber in section 5 of this report.

4 Testing and Evaluation Methods

Testing was in accordance with CDPH Specification 01350 v1.1: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v1.1.

Testing for the private office, and classroom scenario, using 128 ft² (11.89 m²) in classroom and 44 ft² (4.09 m²) in the private office. The chamber volume is 50L with an inlet flow of 50 L/hour. The load factor was 0.465 m²/m³. The average temperature range was 23 °C +/- 2 and 50 +/- 5 %RH. The sampling started on 12/23/2016 and completed 1/2/2017. The sampling was 1/3/201 to 1/6/201 with all GC and LC testing was completed by Jan 12, 2017.

The VOC for the LC sampling was collected on Sep-Pak DNPH-Silica Cartridges. Collection was performed at 50 ml/min for 20 minutes using a vacuum pump with a mass flow meter. The Sep-Pak DNPH-Silica Cartridges were stored in the refrigerator until eluted according to the manufactures instructions into 5 ml of ACN. The samples were collected at 96 hours within the time limitations specified in the standard. The Sep-Pak DNPH-Silica Cartridges samples were run on Shimadzu HPLC system using a Waters Symetry C18 5um 3.9 x 150 column. A gradient profile was used to run the standard Aldehyde/Ketone –DNPH Mix.

For the HPLC testing, no target VOCs were found at the 96 hr time point. No quantification was required using the standard with minimum of a 5 point curve. A check standard was run during the samples to verify system suitability.

The VOC for the GC/MS was collected on Thermo Desorption (TD) tubes Atas GL (A100054) fritted linters filled with Tenax GR packing material. Collection was performed at 50 ml/min for 1 minutes using a vacuum pump with a mass flow meter. The TD tubes were verified to be clean before testing. The samples were collected at 24, 48, and 96 hours within the time limitations specified in the standard, and tested the same day. The samples were run on Shimadzu GC/MS with an ATAS GL High Performance injector for the TD tubes. A Restek Rtx-VMS 40 meter, 0.18 mm ID, 1um df was used.

For determining TVOC direct injection of toluene was used with at least 5 different concentrations. The LOQ for toluene was determined to be 0.008044 ug/m³. Standard Curves diluted with toluene, were performed in triplicate for each standard. The standard was run with the same GC temperature profile as the TD tubes.

4.1.1. Deviation from Standard Method

An additional time point was taken at 72 hrs. because the 24 hr. and 48 hr. varied by more than 25% for the total VOCs suggesting one of the value may be anomalous. The total VOC results for the 24 and 72 hour time points are less than 25%. No addition testing required as variation for the 24 and 72 hour time points are less than 25% when compared to the 96 hour time point.

4.2. RESULTS AND OBSERVATIONS

	Private Office	Standard Classroom
Product Quantities:	Floors	Floors
Inlet flow rate Q (m ³ h ⁻¹)	0.05	0.05
Exposed projected surface area of the test specimen in the chamber A _c (m ²)	0.0232	0.0232
Flow rate of the outside ventilation are Q _B (m ³ h ⁻¹)	20.7	191
Exposed surface area of the installed material in the building A _B (m ²)	4.1	11.8916
Area Specific flow rate q _A (m ³ h ⁻¹)= Q _B /A _B	5.0735	16.0618

							Testing Scenario:	Private Office	Standard Classroom	
							Product Quantities:	floors	floors	
							Sampling Time (hrs):	24 hr	24 hr	
Compound name	CAS Number	Retention Time (minutes)	Area Count Sample (No units)	Area Count Background (No units)	Chamber Concentration C _t (ug m ⁻³)	Chamber background concentration (ug m ⁻³)	*Area Specific Emissions Factor at the sampling time (EF _s) (ug m ⁻² h ⁻¹)	Area Specific: Estimated Building Concentration C _B for Target VOC using EF _s (ug m ⁻³)	Area Specific: Estimated Building Concentration C _B for Target VOC using EF _s (ug m ⁻³)	
Unknown at 11.665	na	11.665	223914	0	71.0966	0	153.0554	30.1674	1.8782	
Unknown at 11.812	na	11.812	178097	0	57.8924	0	124.6297	24.5647	1.5294	
Unknown at 12.184	na	12.184	453531	0	137.2708	0	295.5141	58.2463	3.6264	
Unknown at 12.52	na	12.52	339273	0	104.3423	0	224.6263	44.2742	2.7565	
Unknown at 12.69	na	12.69	679686	0	202.4473	0	435.8249	85.9017	5.3482	
1-Methyl-2-pyrrolidone	872-50-4	13.085	5134089	0	990.1983	0	2131.6813	420.1575	26.1588	
Total:								3365.3315	663.3117	41.2975

							Testing Scenario:	Private Office	Standard Classroom	
							Product Quantities:	Floors	Floors	
							Sampling Time (hrs):	48 hr	48 hr	
Compound name	CAS Number	Retention Time	Area Count Sample	Area Count Background	Chamber Concentration Ct	Chamber background concentration	*Area Specific Emissions Factor at the sampling time (EF _s)	Area Specific: Estimated Building Concentration C _b for Target VOC using EF _s	Area Specific: Estimated Building Concentration C _b for Target VOC using EF _s	
	number	minutes	No units	No units	(ug m ⁻³)	(ug m ⁻³)	(ug m ⁻² h ⁻¹)	(ug m ⁻³)	(ug m ⁻³)	
Unknown at 11.655	na	11.655	985378	0	290.5459	0	625.4820	123.2834	7.6756	
Unknown at 11.803	na	11.803	432813	0	131.3000	0	282.6602	55.7127	3.4687	
Unknown at 12.174	na	12.174	1591868	0	465.3326	0	1001.7598	197.4483	12.2931	
Unknown at 12.509	na	12.509	806762	0	239.0698	0	514.6652	101.4413	6.3157	
Unknown at 12.682	na	12.682	2223239	0	647.2900	0	1393.4742	274.6558	17.1000	
1-Methyl-2-pyrrolidone	872-50-4	13.073	11972070	0	2306.6612	0	4965.7388	978.7543	60.9369	
Total:								8783.7803	1731.2958	107.7898

							Testing Scenario:	Private Office	Standard Classroom	
							Product Quantities:	Floors	Floors	
							Sampling Time (hrs):	72 hr	72 hr	
Compound name	CAS Number	Retention Time	Area Count Sample	Area Count Background	Chamber Concentration Ct	Chamber background concentration	*Area Specific Emissions Factor at the sampling time (EF _s)	Area Specific: Estimated Building Concentration C _b for Target VOC using EF _s	Area Specific: Estimated Building Concentration C _b for Target VOC using EF _s	
	number	minutes	No units	No units	(ug m ⁻³)	(ug m ⁻³)	(ug m ⁻² h ⁻¹)	(ug m ⁻³)	(ug m ⁻³)	
Unknown at 11.655	na	11.656	1115436	0	328.0278	0	706.1724	139.1876	8.6658	
Unknown at 11.802	na	11.802	420394	0	127.7209	0	274.9553	54.1941	3.3741	
Unknown at 12.173	na	12.173	1383860	0	405.3860	0	872.7077	172.0120	10.7094	
Unknown at 12.508	na	12.508	812207	0	240.6390	0	518.0434	102.1071	6.3571	
Unknown at 12.679	na	12.679	1596956	0	466.7990	0	1004.9165	198.0705	12.3318	
1-Methyl-2-pyrrolidone	872-50-4	13.073	6472050	0	1247.7855	0	2686.2102	529.4559	32.9637	
Total:								6063.0055	1195.0272	74.4019

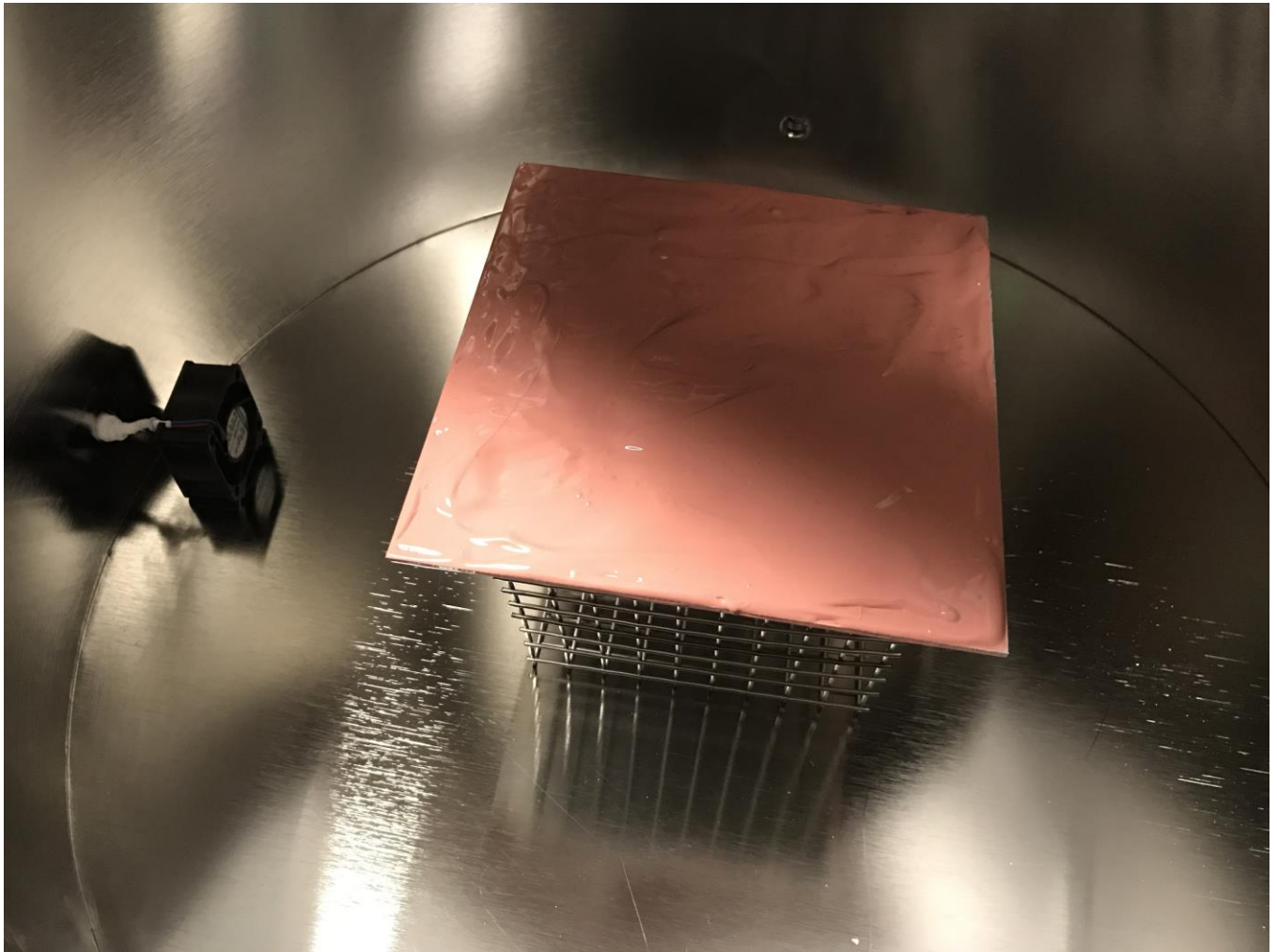
							Testing Scenario:	Private Office	Standard Classroom	
							Product Quantities:	Floors	Floors	
							Sampling Time (hrs):	96 hr	96 hr	
Compound name	CAS Number	Retention Time	Area Count Sample	Area Count Background	Chamber Concentration Ct	Chamber background concentration	*Area Specific Emissions Factor at the sampling time (EF _s)	Area Specific: Estimated Building Concentration C _b for Target VOC using EF _s	Area Specific: Estimated Building Concentration C _b for Target VOC using EF _s	
	number	minutes	No units	No units	(ug m ⁻³)	(ug m ⁻³)	(ug m ⁻² h ⁻¹)	(ug m ⁻³)	(ug m ⁻³)	
Unknown at 11.656	na	11.656	459585	0	13.1884	0	28.3917	5.5960	0.3484	
Unknown at 11.802	na	11.802	180495	0	9.1668	0	19.7340	3.8896	0.2422	
Unknown at 12.174	na	12.174	550522	0	14.4987	0	31.2126	6.1521	0.3830	
Unknown at 12.51	na	12.51	381138	0	12.0580	0	25.9582	5.1164	0.3185	
Unknown at 12.682	na	12.682	1184682	0	23.6368	0	50.8849	10.0295	0.6244	
1-Methyl-2-pyrrolidone	872-50-4	13.076	7185493	0	1385.1391	0	2981.9025	587.7373	36.5923	
Total:								3138.0840	618.5209	38.5089

4.3. EXAMINATION OF RESULTS

1-Methyl-2-pyrrolidone CAS# 872-50-4 was found but not a target CREL VOC. No Formaldehyde or Acetaldehyde were found using HPLC analysis.

5 Appendix A

Photo of tested sample:




6 Conclusion

Intertek has conducted testing on 3M™ Fire Barrier Watertight Spray, to evaluate CDPH Specification 01350 v1.1; Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers v1.1.

3M™ Fire Barrier Watertight Spray complies with limits specified in CDPH Specification 01350 v1.1 February 2010 for private office and classroom. The sample passed the LEED v4 for total VOC according to CDPH Standard Method v1.1 and Target Chemical listed in CDPH Standard Method.

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK
Reported by:



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Reviewed by:



Mark Crawford
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7 Revision Summary

DATE	SUMMARY
Jan 12, 2017	Original date of report
